REMARKS

Claims 1-14 were pending in this application at the time of the Official Action.

Claims 7, 9 and 13 have been cancelled. The specification at page 1, line 4 and page11, lines 13-14 and Claims 1-6, 8, 10-12 and 14 have been amended. These amendments do not add new subject matter and are supported by the specification.

The specification and the drawings are objected to. However the specification has been amended and corrected drawings accompany this response. It is submitted that the objection to the specification and the objection to the drawings may now be withdrawn.

Claims 1 stands rejected under 35 U.S.C Section 112 as having insufficient antecedent basis. However, Claim 1 has been amended to include proper antecedent basis. Therefore, the rejection of Claim 1 under Section 112 is no longer appropriate and must be withdrawn.

Claims 1 and 4 stand rejected under 35 U.S.C Section 103(a) as being unpatentable over U.S. Patent No. 5,919,039, issued to Shaw et al., in view of U.S. Patent No. 4,519,771, issued to Six et al. The Shaw et al. patent describes oven chamber 1 equipped with an endless conveyor and a control system including sensing means 28 for sensing thermal conditions in oven chamber 1, processing means 29 for processing the signals provided by sensing means 28, and operating means 30 for controlling the rate of supply of combustible gaseous mixture to burners 17 and 18. (See Col. 8, lines 22-28 of the Shaw et al. patent.)

Burners 17 and 18 are each provided with an injector and valve assembly 20. The valve of assembly 20 is described as a valve used to shut off the flow of combustible gas to assembly 20 and the associated burner (17 or 18). (See Col. 7, lines 24-27, and lines 52-57 of the Shaw et al. patent.) In contrast, six control valves (not shown) are described as controlling the rate of supply of compressed air to injectors of the assemblies 20 (See Col. 7, lines 45-52 of the Shaw et al. patent).

Compressed air supplied to each injector assembly 20 reportedly entrains combustible gas to form a combustible mixture which is fed to an associated burner (17 or 18). Six control valves arranged in manifold 22 determine the rate of compressed air supply to each of the six injectors associated with burners 17 and 18, thereby determining the rate at which the combustible gaseous mixture is supplied to each of burners 17 and 18 and the rate of heat output. (See Col. 7, lines 57-61 of the Shaw et al. patent.)

The Shaw et al. patent does not teach or suggest a controller responsive to sensed temperatures to regulate a fuel gas valve, a signal conditioner responsive to the controller for providing signals to the fuel gas valve and/or an ignition module associated with a safety shutdown valve. Additionally, the Shaw et al. patent does not teach or suggest a pair of transformers, one transformer being coupled to energize a signal conditioner and the other transformer being coupled to energize an ignition module to prevent an electrical feedback which might defeat the safety shutdown valve as recited in Claim 1.

The Six et al. patent describes a circuit for a flame detecting device. In the circuit, igniter device 25, AC supply source terminals 4 and 5, alternating current generator 7, and control device 18 are electrically isolated from burner 1 and electrode 2 by isolating transformer 6 and variable resistance element 28. The Six et al. patent reports that igniter device 25 includes an ignition transformer for producing a spark. (See Col. 6, lines 16-39 and Figure 1 of the Six et al. patent.) The isolation provided by transformer 6 and variable resistance element 28 reportedly permits detection of flame rectification damping in the part of the circuit which contains burner 1 and electrode 2. (See Col. 2, lines 8-12 of the Six et al. patent.)

The Six et al. patent does not teach or suggest a pair of transformers, one transformer being coupled to energize the signal conditioner and the other transformer being coupled to energize the ignition module as recited in Claim 1. To the contrary, the Six et al. patent reports

that igniting device 25 is energized from terminals 4 and 5 which are connected to an AC supply source. (See Col. 6, lines 20-26 and Fig. 1 of the Six et al. patent.) Practitioners will appreciate that the transformer depicted schematically in Fig. 1 is the ignition transformer included within igniter device 25.

Also, the Six et al. patent does not teach or suggest preventing an electrical feedback which might otherwise defeat a safety shutdown valve as recited in Claim 1. To the contrary, control device 18, which includes circuitry for shutting off the gas supply by an electric valve, and an igniter device 25 are located in the same part of the flame detecting circuit. (See Col. 4 lines 4-17 of the Six et al. patent.) Therefore, the rejection of Claim 1 and dependent Claim 4 over the Shaw et al. patent in view of the Six et al. patent is inappropriate and should be withdrawn.

Claims 2-3 and 5-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw et al. in view of Six et al. as applied to Claims 1 and 4, and further in view of U.S. Patent No. 6,149,065, issued to White et al. However, the White et al. patent describes a modulating thermostat that has no electrical components of any kind. Consequently, the White al. patent cannot supply the teachings absent from the Shaw et al. and the Six et al. patents as described above. For the reasons set forth above with respect to Claim 1, Claims 2-3 and 5-12 are also allowable.

Additionally, regarding Claims 5-7, nothing in the cited prior art teaches the claimed system for delivering a stream of heated air from a plenum through a cavity and returning at least a portion of the stream to the plenum, as recited in Claim 5 and required by dependent Claims 6-7.

Regarding Claims 8-11, the prior art does not teach or suggest an energy management system comprising a controller, a signal conditioner, a fuel gas modulating valve, an ignition

module, and a pair of transformers, one of the transformers delivering power to the signal conditioner, and the other of the transformers delivering power to the ignition module to prevent an electrical feedback signal between them, as recited in Claim 8 and required by dependent Claims 10-11. To the contrary, ignition device 25 of the Six et al. patent is powered directly from an AC supply source. (See Col. 6, lines 20-26 and Fig. 1 of the Six et al. patent.) Therefore, the rejection of Claims 2-3 and 5-12 is inappropriate and must be withdrawn.

Regarding Claim 12, nothing in the prior art teaches first and second transformers coupled in parallel to provide electrical isolation between their secondary windings, one of the secondary windings supplying power to the signal conditioner and the other of the secondary windings supplying power to the ignition module, as recited in Claim 12. Indeed, not one of the cited references teaches a signal conditioner for converting signals from a controller into signals for operating a fuel gas modulating valve, as recited in Claim 12. It is, therefore, impossible for the combined teachings of the references to suggest any method of supplying power to the signal conditioner specified in Claim 12.

U.S. Patent No. 5,821,503, issued to Witt et al., does not teach or suggest any type of electrical isolation for preventing a feed back of electrical signals, as recited in Claim 12. At most, the Witt et al. patent teaches that the speed of AC electric motor 52, which includes field coil 62, can be controlled by improved control circuit 54, and utilized to drive a conveyor through a conveyor oven. (See Col. 4, lines 35-59 of the Witt et al. patent.) Rather than providing electrical isolation, field coil 62 generates an electromagnetic field for turning the shaft of AC electric motor 52. Therefore, the rejection of Claims 2-3 and 5-12 is inappropriate and should be withdrawn.

Claims 13-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw et al. in view of Six et al. and White et al. as applied to Claims 12, and further in view of U.S.

Patent No. 5,821,503, issued to Witt et al. However, for the reasons set forth above with respect to Claim 12, the teachings of the Shaw et al., the Six et al. the White et al. and the Witt et al. patents do not teach or suggest the invention specified in Claim 14. Therefore, the rejection of Claim 14 is inappropriate and must be withdrawn.

Applicants request that the references listed in a Supplementary Information Disclosure Statement, which accompanies this Response, be considered in the present examination. A check in the amount of $180.00 accompanies this response for payment of the appropriate fee.

Reconsideration of the Specification and the Claims, and prompt allowance of the Application, is respectfully requested.

Sincerely,

Date: 5/31/02

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning at page 1, line 4 has been amended as follows:

This is a continuation-in-part of Serial No. 09/760,194 filed [~~January 12, 2000~~] January 12, 2001, which, in turn, [~~was a formal~~] claims priority from and replaces Provisional application Serial No. 60/249,685, filed November 17, 2000.

Paragraph beginning at page 11, line 13 has been amended as follows:

The controls are in a compartment [~~82~~] 87 at the front of the oven which is cooled by fans seen in [~~Figs. 8 and 9~~] Fig. 8.

In the Claims:

Claim 1 has been amended as follows:

1 (Amended). A conveyor oven control comprising an energy management system for controlling a flowing stream of hot air through an oven for baking a food product; a conveyor extending through said cavity for conveying said food product through said oven; a fuel gas line for conveying fuel gas from a source to a burner in said oven; said energy management system being interposed in said fuel gas line and between said source and said burner for [~~modulating~~] controlling a flow of fuel gas to said burner; said energy management system comprising a controller, a signal conditioner, a fuel gas valve, and an ignition module; a safety shut down valve associated with said ignition module to prevent said ignition module from re-igniting said burner during hazardous conditions; a pair of sensors in said oven for sensing instantaneous oven temperatures; said controller being responsive to said sensed temperatures for controlling said

energy management system to regulate [~~an~~] operation of [~~the~~] said [~~modulating~~] fuel gas valve and, thereby, the flow of fuel gas to the burner in order to maintain oven temperature within a predetermined range, said signal conditioner being responsive to said controller for providing signals that control said [~~modulating~~] fuel gas valve; and a pair of transformers, one transformer being coupled to energize said signal conditioner and the other transformer being coupled to energize said ignition module [~~said controller, said signal conditioner, and said ignition module, being electrically isolated from each other~~] to prevent an electrical feed back [~~between them~~] which might otherwise defeat the safety shut down valve.

Claim 2 has been amended as follows:

2 (Amended). The conveyor oven of claim 1 wherein said [~~energy management system includes a modulating~~] fuel gas valve [~~comprising~~] comprises a diaphragm closing a chamber having an internal pressure controlled by fluctuations of oven temperatures, a main valve in said fuel gas valve coupled to move with said diaphragm for regulating an amount of fuel gas flowing from said source through said fuel gas line to said burner in response to movement of said diaphragm, and a tap line for applying said pressure in said chamber acting on said diaphragm in response to said sensors whereby the flow of said fuel gas through said main valve in said [~~modulating~~] fuel gas valve to said burner is regulated as a function of said instantaneous oven temperature.

Claim 3 has been amended as follows:

3 (Amended). The conveyor oven of claim 2 and a by-pass line for enabling a limited amount of fuel gas to flow around said main valve of said [~~modulating~~] fuel gas valve whereby said burner continues to burn and does not shut down while said main valve is closed.

Claim 4 has been amended as follows:

4 (Amended). The conveyor oven of claim 1 wherein said burner heats air in a plenum at an input end of said oven from which hot air is driven through said cavity, said sensors being located at different places in a plenum.

Claim 5 has been amended as follows:

5 (Amended). A conveyor oven for automatically baking a food product over a timed period under the control of an energy management system, said oven comprising a cavity having a burner associated therewith for providing heated air in said cavity, a fuel gas line for delivering fuel gas to said burner via said energy management system, said burner heating air in a plenum, a system for delivering said stream of heated air from said plenum through said cavity and [~~return~~] returning at least a portion of said stream to said plenum, a pair of sensors at different locations in said plenum for sensing an instantaneous temperature of said heated air in said plenum, a valve for modulating the [~~amount of~~] fuel gas delivered to said burner responsive to said sensed instantaneous oven temperature, said delivered fuel gas comprising at least a minimum amount of fuel gas so that said burner means remains in continuous operation regardless of said modulation of fuel gas delivered to said burner, a controller responsive to said sensors for providing signals for regulating said fuel gas modulating valve, a signal conditioner, and an ignition module [~~electrically isolated from each other~~], said signal conditioner converting said

signals provided by said controller into control signals for operating said fuel gas modulating valve, and a pair of transformers, one transformer being coupled to energize said signal conditioner and the other transformer being coupled to energize said ignition module to prevent an electrical feedback between said signal conditioner and said ignition module [~~said electrical isolation preventing said ignition module from maintaining said burner during a hazardous condition~~].

Claim 6 has been amended as follows:

6 (Amended). The oven of claim 5 and a conveyor for delivering a food product through said cavity over a timed period during which said burner continuously delivers heat to said cavity, said heat baking said product as it is conveyed through said oven, and a line for by-passing said minimum amount of fuel gas around said fuel gas modulating valve in order to prevent said burner means from shutting down during periods while said controller is not calling for heat.

Claim 7 has been cancelled.

Claim 8 has been amended as follows:

8 (Amended). An energy management system for a conveyor oven that bakes a food product during a passage through said oven, said energy management system [~~comprising a modulating system for~~] delivering a flowing stream of hot air from a burner and over said food product during said passage[~~,~~] and comprising a fuel gas valve, a controller for sensing and regulating the temperature of said stream of hot air, a signal conditioner responsive to said controller for producing signals required to operate [~~said modulation system, whereby said~~

~~burner delivers heat jointly responsive to said controller and said signal conditioner,~~] said fuel gas valve, an ignition module, and a pair of transformers, one of said transformers delivering power to said signal conditioner, and the other of said transformers delivering power to [~~an electrical isolation located between said controller, said signal conditioner, and~~] said ignition module to prevent an electrical feed back signal between them[~~, whereby said ignition module cannot re-ignite said burner responsive to a feed back signal that might otherwise appear in the absence of said isolation~~].

Claim 9 has been cancelled.

Claim 10 has been amended as follows:

10 (Amended). The system of claim 9 wherein said fuel gas [~~modulating system comprises a modulating~~] valve has [~~having~~] a pressure chamber closed by a diaphragm which expands and contracts in response to the pressure in said chamber, said pressure increasing and decreasing in said chamber jointly responsive to said controller and said signal conditioner as a function of the temperature of said stream of hot air, a fuel gas line, and a main valve in said fuel gas line, said main valve being connected to said diaphragm whereby said main valve opens and closes as said diaphragm expands and contracts in order to modulate a flow of fuel gas in said line.

Claim 11 has been amended as follows:

11 (Amended). The system of claim 10 and a by-pass line around said main valve, said bypass line delivering enough fuel gas to continuously maintain said burner in at least a minimum heat condition despite operation of said main valve responsive to said diaphragm.

Claim 12 has been amended as follows:

12 (Amended). A conveyor oven comprising a modulating fuel gas valve for supplying heat to said oven; a controller; a signal conditioner for converting signals from said controller into signals for operating said fuel gas modulating valve; an on/off safety valve in said fuel gas line to automatically shut down said oven during predetermined conditions; an ignition module for igniting fuel gas delivered by said safety valve; and an electrical control circuit for operating said fuel gas modulating valve, controller, signal conditioner, and ignition module, said circuit having a first section relating to mechanical parts of the oven and a second section relating to energy management of heat delivery in said oven, and said electrical control circuit having electrical isolation for preventing a feed back of electrical signals which might prevent shut down of [~~the~~] said safety valve during said predetermined conditions[~~.~~] ;

wherein said second section includes first and second transformers coupled in parallel to provide said isolation between their secondary windings, one of said secondary windings supplying power to said signal conditioner and the other of said secondary windings supplying power to said ignition module, said safety valve being coupled to supply fuel gas via said ignition module.

Claim 13 has been cancelled.

Claim 14 has been amended as follows:

14 (Amended). The oven of claim [~~13~~] 12, and a pair of sensors for detecting heat in said oven, said sensors being coupled to drive said controller, said signal conditioner being coupled to operate said [~~modulating~~] fuel gas modulating valve, and a coupling from said controller to conditioner whereby heat detected by said sensors controls said fuel gas modulating valve.

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